

Section
5.2H

Not all quadratic equations have real number solutions. Solve the following equations to find their real or complex solutions.

$$4x^2 - 1 = 15$$

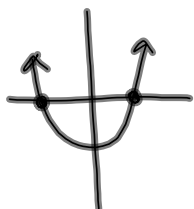
$\sqrt{x^2}$ has
2 solutions

1) $4x^2 - 1 = 15$

$$\frac{4x^2}{4} = \frac{16}{4}$$

$$\sqrt{x^2} = \sqrt{4}$$

$$x = \pm 2$$



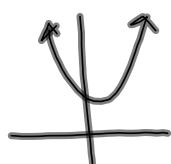
$$x = 2 \quad x = -2$$

2) $x^2 + 7 = -29$

$$\sqrt{x^2} = \sqrt{-36}$$

$$x = \pm \sqrt{-1 \cdot 36}$$

$$x = \pm 6i$$



$$x = 6i \quad x = -6i$$

3) $\frac{2(x+2)^2}{2} = \frac{-18}{2}$

$$\sqrt{(x+2)^2} = \sqrt{-9}$$

$$x+2 = \pm 3i$$

$$x+2 = +3i$$

$$x+2 = -3i$$

$$x = -2 + 3i \quad x = -2 - 3i$$

4) $\frac{1}{4}(x-8)^2 = -4$

$$\sqrt{(x-8)^2} = \sqrt{-16}$$

$$x-8 = \pm 4i$$

$$x = +8 + 4i$$

$$x = +8 - 4i$$

5) $(x-35)^2 - 81 = 0$

change $\uparrow$
to $-$

$$(x-35)^2 - 81 = 0$$

$$\sqrt{(x-35)^2} = \sqrt{81}$$

$$x-35 = \pm 9$$

$$x-35 = 9$$

$$x-35 = -9$$

$$x = 44 \quad x = 26$$

6) $\frac{2(x-3)^2}{2} = \frac{8}{2}$

$$\sqrt{(x-3)^2} = \sqrt{4}$$

$$x-3 = \pm 2$$

$$x-3 = 2$$

$$x-3 = -2$$

$$x = 5 \quad x = 1$$